

What is Claimed is:

1. A spindle motor for disk drives comprising:
a circuit board;

5 a cylindrical housing fixedly mounted on the circuit board
and allowing a shaft to be rotatably inserted into the housing;
a plurality of grooves formed in an inner periphery of
the housing;

a molybdenum disulfide film formed through penetration
10 in the inner periphery of the housing including the grooves,
the molybdenum disulfide film and the grooves serving as
lubricant to the shaft during rotation of the shaft;

15 an armature arranged on the circuit board adjacent to an
outer periphery of the housing and having lamellar conductors
laminated one atop another; and

20 a rotor integrally fixed to the shaft and having a
turntable arranged in a top portion thereof for seating a disk
and a magnet arranged in an underside portion thereof for
cooperating with the armature to generate electromagnetic force
to turn the rotor.

2. The spindle motor for disk drives as set forth in claim
1, wherein the grooves are formed radially in the inner periphery
of the housing at a uniform spacing in an axial direction.

3. The spindle motor for disk drives as set forth in claim 1, wherein the grooves are formed in the inner periphery of the housing by spraying fluid under high pressure, the fluid being made of a material same as that of the molybdenum disulfide film.

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4. The spindle motor for disk drives as set forth in claim 1, wherein the magnet of the rotor is formed by printing magnet powder on the underside portion of the rotor.

10 5. The spindle motor for disk drives as set forth in claim 4, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.

15 6. The spindle motor for disk drives as set forth in claim 1, wherein the magnet of the rotor is formed by depositing magnetic powder on the underside portion of the rotor.

20 7. The spindle motor for disk drives as set forth in claim 6, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.

25 8. A spindle motor for disk drives comprising:
a circuit board;

a cylindrical housing fixedly mounted on the circuit board;

a shaft rotatably inserted into the housing;

5 a plurality of grooves formed in an inner periphery of the housing;

a molybdenum disulfide film formed through penetration in the inner periphery of the housing including the grooves, the molybdenum disulfide film and the grooves serving as lubricant to the shaft during rotation of the shaft;

10 an armature arranged on the circuit board adjacent to an outer periphery of the housing and having lamellar conductors laminated one atop another; and

15 a rotor integrally fixed to the shaft and having a turntable arranged in a top portion thereof for seating a disk and a magnet arranged in an underside portion thereof for cooperating with the armature to generate electromagnetic force to turn the rotor.

9. The spindle motor for disk drives as set forth in claim
20 8, wherein the grooves are formed in the inner periphery of the housing by spraying fluid under high pressure, the fluid being made of a material same as that of the molybdenum disulfide film.

10. The spindle motor for disk drives as set forth in claim
25 8, wherein the magnet of the rotor is formed by printing magnet

powder on the underside portion of the rotor.

11. The spindle motor for disk drives as set forth in claim
10, wherein the magnetic powder has a particle size ranging about
5 500 to 1000nm so that a large number of powder particles cohere
at the underside portion of the rotor to enhance magnetic force.

12. The spindle motor for disk drives as set forth in claim
8, wherein the magnet of the rotor is formed by depositing
10 magnetic powder on the underside portion of the rotor.

13. The spindle motor for disk drives as set forth in claim
12, wherein the magnetic powder has a particle size ranging about
500 to 1000nm so that a large number of powder particles cohere
15 at the underside portion of the rotor to enhance magnetic force.

14. A personal mobile communication system comprising:
a main body having a data input unit, a main body circuit
board and a liquid crystal display; and
20 a disk drive having a spindle motor mounted inside the
main body for rotating a data storage disk, wherein the spindle
motor includes:

a spindle motor circuit board selectively connected
with the main body circuit board;
25 a cylindrical housing fixedly mounted on the spindle

motor circuit board and allowing a shaft to be rotatably inserted into the housing;

a plurality of grooves formed in an inner periphery of the housing;

5 a molybdenum disulfide film formed through penetration in the inner periphery of the housing including the grooves, the molybdenum disulfide film and the grooves serving as lubricant to the shaft during rotation of the shaft;

10 an armature arranged on the spindle motor circuit board adjacent to an outer periphery of the housing and having lamellar conductors laminated one atop another; and

15 a rotor integrally fixed to the shaft and having a turntable arranged in a top portion thereof for seating a disk and a magnet arranged in an underside portion thereof for cooperating with the armature to generate electromagnetic force to turn the rotor.

15. The personal mobile communication system as set forth in claim 14, wherein the main body comprises a mobile phone which 20 includes a transmitting unit, a receiving unit and a key pad.

16. The personal mobile communication system as set forth in claim 14, wherein the main body comprises a personal digital assistant which is compatible with computers to communicate 25 information with the same.

17. The personal mobile communication system as set forth
in claim 14, wherein the main body comprises a mobile computer.

18. The personal mobile communication system as set forth
5 in claim 14, wherein the disk drive comprises a hard disk drive
for storing information via magnetic recording.

19. The personal mobile communication system as set forth
in claim 14, wherein the disk drive comprises an optical disk
10 drive for storing information in an optical disk via optical
signals.

20. The personal mobile communication system as set forth
in claim 14, wherein the disk drive is provided separate from
15 the main body to be detachably mounted inside the main body,
and further includes an interface unit for allowing the disk
drive to share data with the main body.

21. The personal mobile communication system as set forth
20 in claim 14, wherein the grooves are formed in the inner
periphery of the housing by spraying fluid under high pressure,
the fluid being made of a material same as that of the molybdenum
disulfide film.

25 22. The personal mobile communication system as set forth

in claim 14, wherein the magnet of the rotor is formed by printing magnet powder on the underside portion of the rotor.

23. The personal mobile communication system as set forth
5 in claim 14, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.

10 24. The personal mobile communication system as set forth in claim 14, wherein the magnet of the rotor is formed by depositing magnetic powder on the underside portion of the rotor.

15 25. The personal mobile communication system as set forth in claim 24, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.

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26. A personal mobile communication system comprising:
a main body having a data input unit, a main body circuit board and a liquid crystal display; and
a disk drive having a spindle motor mounted inside the
25 main body for rotating a data storage disk, wherein the spindle

motor includes:

a spindle motor circuit board selectively connected with
the main body circuit board;

5 a cylindrical housing fixedly mounted on the spindle body
circuit board;

a shaft rotatably inserted into the housing;

a plurality of grooves formed in an inner periphery of
the housing;

10 a molybdenum disulfide film formed through penetration
in the inner periphery of the housing including the grooves,
the molybdenum disulfide film and the grooves serving as
lubricant to the shaft during rotation of the shaft;

15 an armature arranged on the circuit board adjacent to an
outer periphery of the housing and having lamellar conductors
laminated one atop another; and

20 a rotor integrally fixed to the shaft and having a
turntable arranged in a top portion thereof for seating a disk
and a magnet arranged in an underside portion thereof for
cooperating with the armature to generate electromagnetic force
to turn the rotor.

27. The personal mobile communication system as set forth
in claim 26, wherein the main body comprises a mobile phone which
includes a transmitting unit, a receiving unit and a key pad.

28. The personal mobile communication system as set forth
in claim 26, wherein the main body comprises a personal digital
assistant which is compatible with computers to communicate
information with the same.

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29. The personal mobile communication system as set forth
in claim 26, wherein the main body comprises a mobile computer.

30. The personal mobile communication system as set forth
10 in claim 26, wherein the disk drive comprises a hard disk drive
for storing information via magnetic recording.

31. The personal mobile communication system as set forth
in claim 26, wherein the disk drive comprises an optical disk
15 drive for storing information in an optical disk via optical
signals.

32. The personal mobile communication system as set forth
in claim 26, wherein the disk drive is provided separate from
20 the main body to be detachably mounted inside the main body,
and further includes an interface unit for allowing the disk
drive to share data with the main body.

33. The personal mobile communication system as set forth
25 in claim 26, wherein the grooves are formed in the inner

periphery of the housing by spraying fluid under high pressure, the fluid being made of a material same as that of the molybdenum disulfide film.

5 34. The personal mobile communication system as set forth in claim 26, wherein the magnet of the rotor is formed by printing magnet powder in the underside portion of the rotor.

10 35. The personal mobile communication system as set forth in claim 34, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.

15 36. The personal mobile communication system as set forth in claim 26, wherein the magnet of the rotor is formed by depositing magnetic powder on the underside portion of the rotor.

20 37. The personal mobile communication system as set forth in claim 36, wherein the magnetic powder has a particle size ranging about 500 to 1000nm so that a large number of powder particles cohere at the underside portion of the rotor to enhance magnetic force.